A New Innovation in Data Compression

Abstract:

A key ingredient of nearly all data compression algorithms is an entropy coder. An entropy coder is the "engine" of a data compression algorithm -- it takes a data sequence (e.g., bits) and, based on a probabilistic model of the data, produces a more compact (i.e., compressed) representation of the data sequence. Other components of a data compression algorithm perform processing operations that transform a data source into a form more amenable to compression by the entropy coder.

An adaptable entropy coder is one that can accommodate a data probability model that can be updated with each new data bit. Adaptable entropy coders are of interest because they allow more sophisticated models to be used, resulting in more efficient data compression. A low-complexity adaptable entropy coding technique recently developed at NASA's Jet Propulsion Laboratory offers a significant improvement in encoding and decoding speeds over the current state-of-the-art. This new entropy coder might be an important component of a medical image data compression system.

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